WHAT IS CLAIMED IS:

1. A data communication method for a mobile communication system, comprising the steps of:

a) determining whether data communication is needed between at least two MSs (Mobile Stations) located in a service area of one BTS (Base Transmit Subsystem);

b) if the data communication between the at least two MSs is needed, assigning one common physical half-duplex data channel to the at least two MSs; and

c) if data is transmitted to the at least two MSs over a downlink channel of the half-duplex data channel, adding a header to the data, and transmitting the header and the data to the at least two MSs.

2. The method as set forth in claim 1, wherein the at least two MSs receiving the data reply to corresponding traffic or signal data only when they are indicated as a destination in a header of the data.

3. The method as set forth in claim 1, wherein one of the at least two MSs has authority to transmit the data over an uplink channel of the half-duplex data channel.

4. The method as set forth in claim 3, wherein the authority is removed by transmitting additional signaling information to the BTS when the one of the at least two MSs finishes transmission of all the data.

5. The method as set forth in claim 2, wherein the replying MS is periodically assigned a small-sized uplink space to transmit reporting ACK (ACKnowledgement) data for the received data.

6. A method for establishing data communication between at least two MSs (Mobile Stations) in a mobile communication system, comprising the steps of:

a) determining whether a callee MS is located in a service area of one BTS (Base Transmit Subsystem) connected to a caller MS;

b) if the callee MS and the caller MS are located in the service area of the BTS, requesting to establish half-duplex data connection between the caller MS and the callee MS;

c) if the data communication between the caller MS and callee MS is needed, assigning one common physical half-duplex data channel to the caller MS and the callee MS ; and

d) if data is transmitted over a downlink channel of the half-duplex data channel assigned in common, adding a header to the data, and transmitting the data with the header.